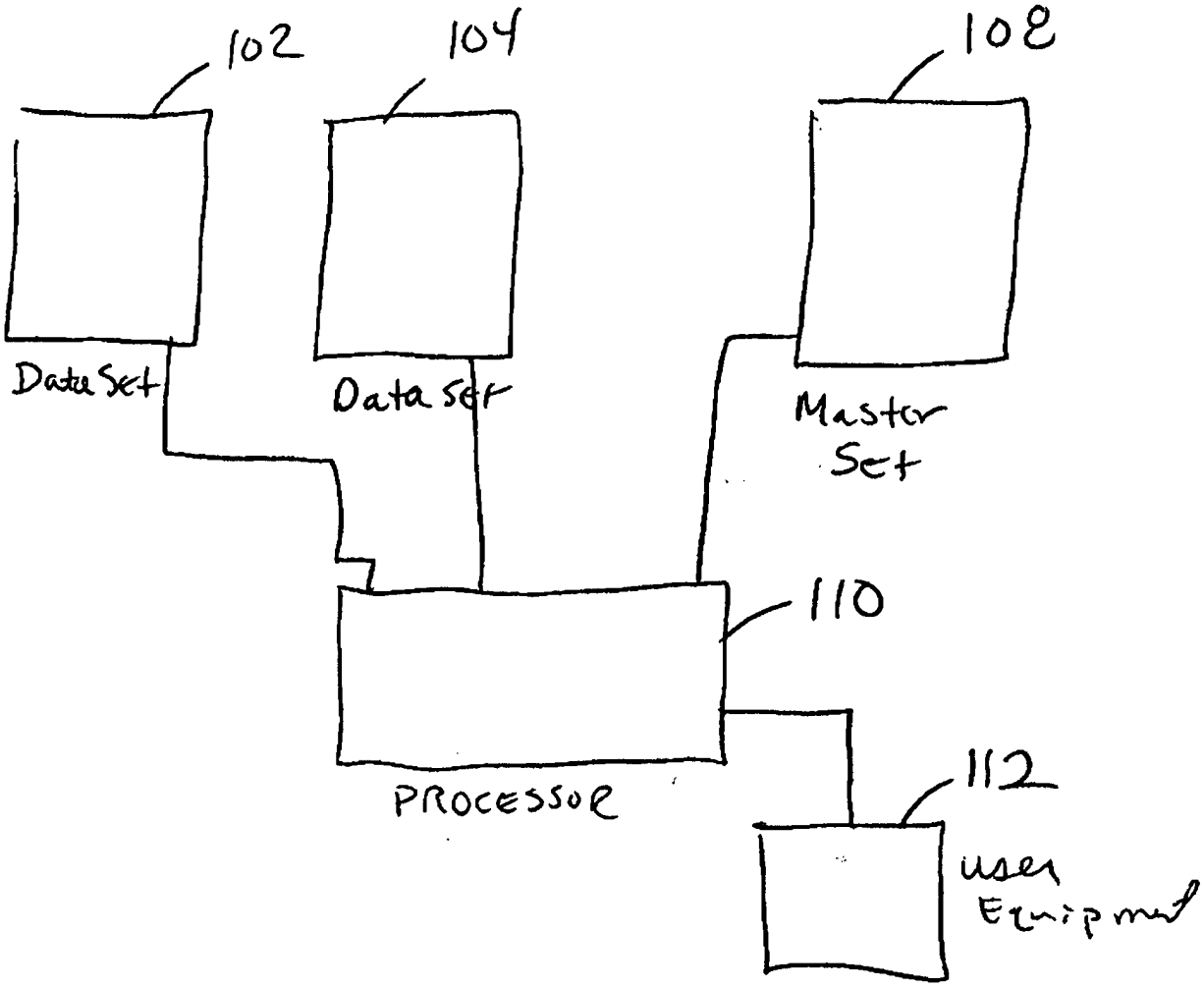

102
104
108
Data Set
Data Set
Master Set
110
PROCESSOR
112
User Equipment

FIG. 1

FIG. 2

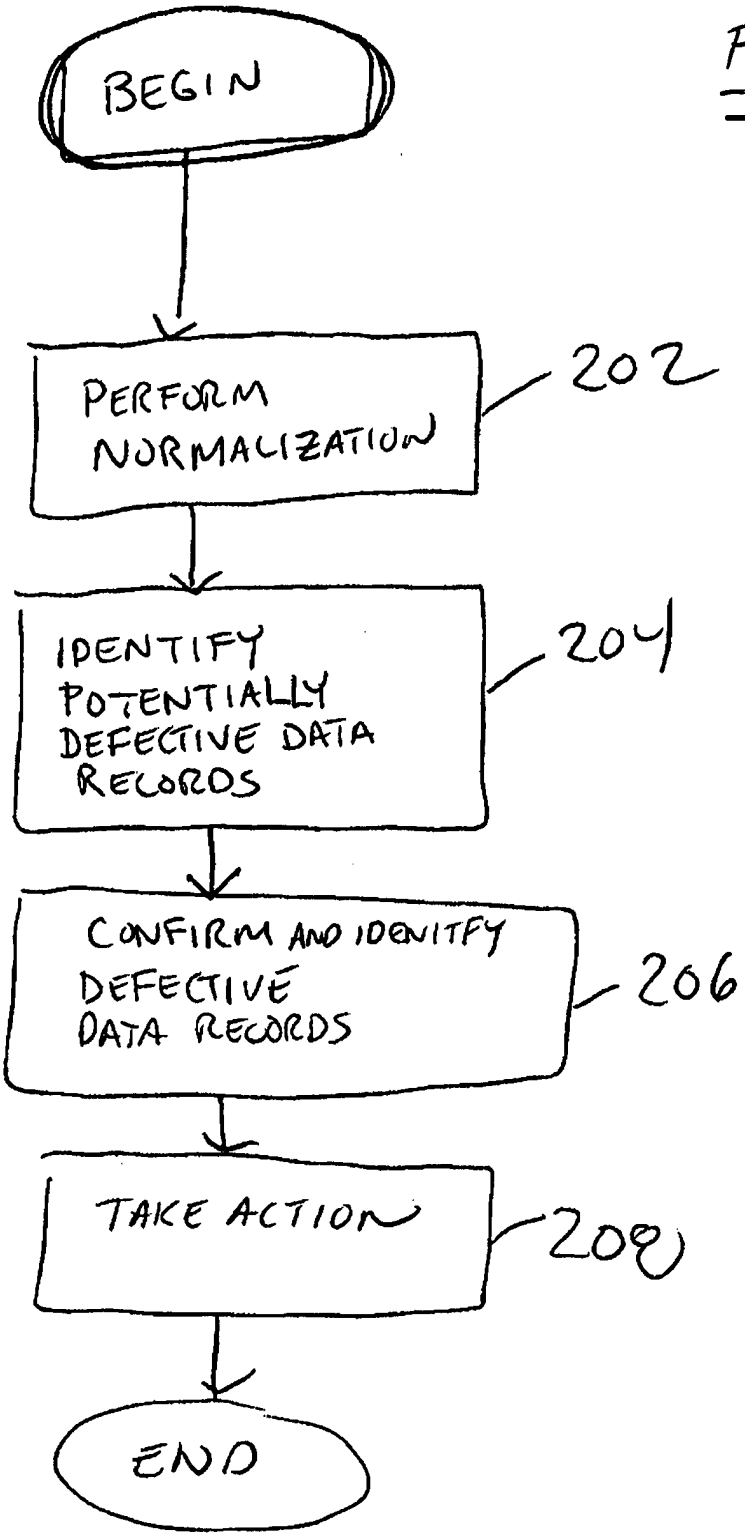
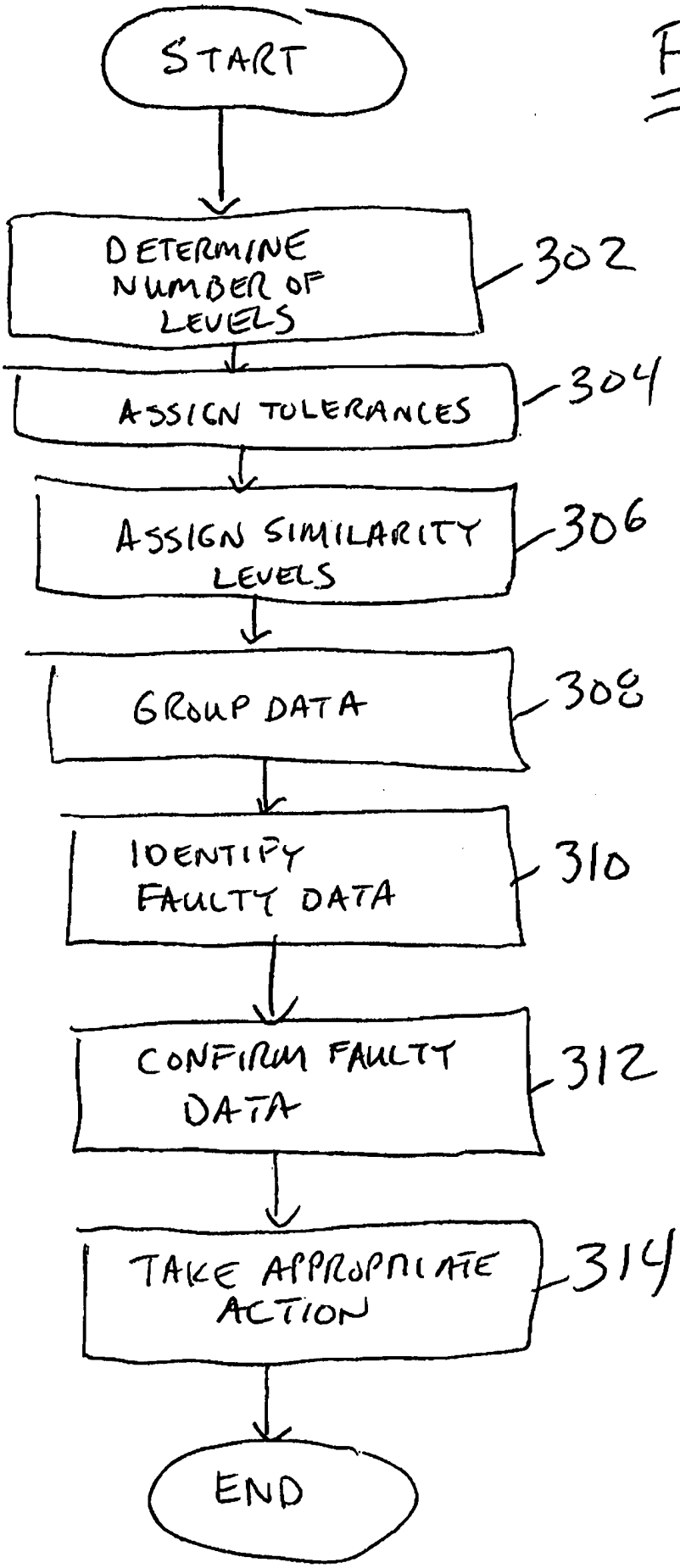

BEGIN
PERFORM NORMALIZATION
202
IDENTIFY POTENTIALLY DEFECTIVE DATA RECORDS
204
CONFIRM AND IDENTIFY DEFECTIVE DATA RECORDS
206
TAKE ACTION
208
END

FIG. 3


START
DETERMINE NUMBER OF LEVELS
302
ASSIGN TOLERANCES
304
ASSIGN SIMILARITY LEVELS
306
GROUP DATA
308
IDENTIFY FAULTY DATA
310
CONFIRM FAULTY DATA
312
TAKE APPROPRIATE ACTION
314
END

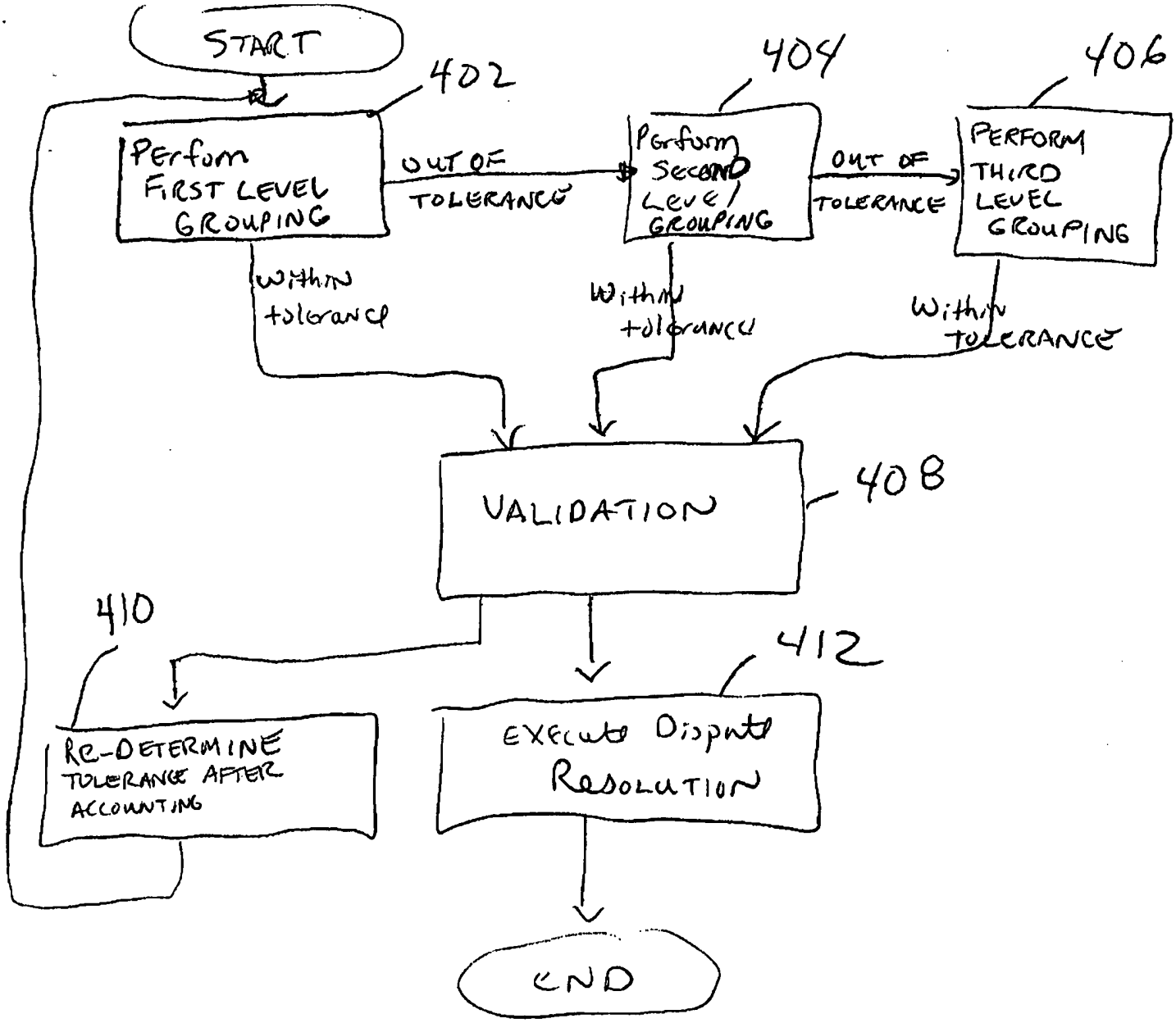

START
402
404
406
Perform First Level Grouping
OUT OF TOLERANCE
Perform Second Level Grouping
OUT OF TOLERANCE
PERFORM THIRD LEVEL GROUPING
within tolerance
Within tolerance
Within TOLERANCE
VALIDATION
408
410
412
RE-DETERMINE TOLERANCE AFTER ACCOUNTING
EXECUTE DISPUTE RESOLUTION
END

FIG. 4

FIG. 5

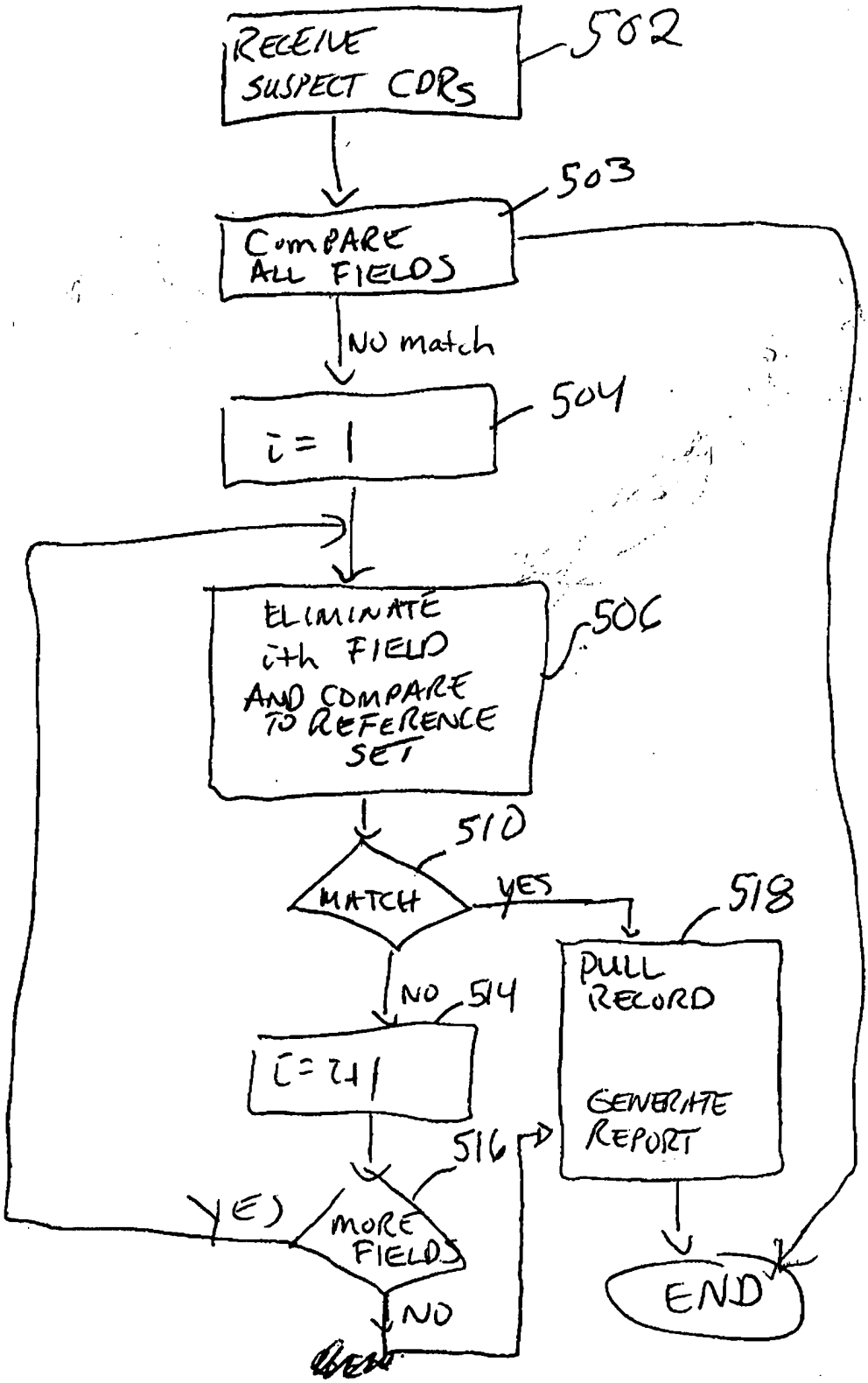

RECEIVE SUSPECT CDRs
502
COMPARE ALL FIELDS
503
NO match
i = 1
504
ELIMINATE ith FIELD AND COMPARE TO REFERENCE SET
506
MATCH
510
YES
518
PULL RECORD
GENERATE REPORT
NO
514
i = i+1
516
MORE FIELDS
YES
NO
END

FIG. 6A

ID	Originating number	Terminating number	Date	Time	Duration (s)
1	6612853500	8473926647	7/15/2003	2:02:00 PM	25
2	7278564911	3346874158	7/15/2003	2:08:00 PM	14
3	6612853500	9724915705	7/15/2003	2:42:00 PM	65
4	6612853500	2516332478	7/15/2003	2:22:00 PM	43
5	7278564911	4053304319	7/15/2003	2:32:00 PM	12
6	6612853500	2054676542	7/15/2003	2:54:00 PM	2
7	6612853500	2155483962	7/15/2003	3:43:00 PM	54
8	7278564911	2564428639	7/15/2003	3:44:00 PM	76
9	6612853500	2564428974	7/15/2003	3:44:00 PM	43
10	7278564911	9565417608	7/15/2003	4:23:00 PM	22
11	6612853500	9724960312	7/15/2003	4:24:00 PM	11
12	6612853500	7035345067	7/15/2003	4:40:00 PM	145
13	6612853500	2058710227	7/15/2003	4:53:00 PM	43
14	7278564911	6163352268	7/15/2003	5:04:00 PM	64
15	7278564911	7706432824	7/15/2003	5:19:00 PM	23
16	6612853500	7279376090	7/15/2003	5:53:00 PM	216
17	7278564911	5614344310	7/15/2003	7:45:00 PM	241
18	7278564911	5806622969	7/16/2003	2:02:00 PM	261
19	6612853500	5616942852	7/16/2003	2:12:00 PM	241
20	7278564911	2166711776	7/16/2003	2:14:00 PM	21

FIG. 6B

ID	Originating number	Terminating number	Date	Time	Duration (s)
1	6612853500	8473926647	7/15/2003	2:02:00 PM	25
2	7278564911	3346874158	7/15/2003	2:08:00 PM	14
3	6612853500	9724915705	7/16/2003	2:42:00 PM	65
4	6612853500	2516332478	7/15/2003	2:22:00 PM	43
5	7278564911	4053304319	7/15/2003	2:32:00 PM	12
6	6612853500	2054676542	7/15/2003	2:54:00 PM	2
7	6612853500	2155483962	7/15/2003	3:34:00 PM	54
8	7278564911	2564428639	7/15/2003	3:44:00 PM	76
9	6612853500	2564428974	7/15/2003	3:54:00 PM	43
10	7278564911	9565417608	7/15/2003	4:23:00 PM	22
11	6612853500	9724960312	7/15/2003	4:24:00 PM	11
12	6612853500	7035345067	7/15/2003	4:40:00 PM	195
13	6612853500	2058710227	7/15/2003	4:53:00 PM	49
14	7278464911	6163352268	7/15/2003	5:04:00 PM	64
15	7278564911	7706432824	7/15/2003	5:19:00 PM	13
16	6612853500	7279376090	7/15/2003	5:53:00 PM	216
17	7278564911	5614344310	7/15/2003	7:45:00 PM	281
18	7278564911	5806622969	7/16/2003	2:02:00 PM	261
19	6612853500	5616942852	7/16/2003	2:12:00 PM	241
20	7278564911	2166711776	7/16/2003	2:14:00 PM	21
21	5122322321	6172332321	7/15/2003	2:33:00 PM	43

FIG. 6C

Originating number	Date	hour	Calls	Duration (s)
6612853500	7/15/2003	14	4	135
7278564911	7/15/2003	14	2	26
6612853500	7/15/2003	15	2	97
7278564911	7/15/2003	15	1	76
6612853500	7/15/2003	16	3	199
7278564911	7/15/2003	16	1	22
6612853500	7/15/2003	17	1	216
7278564911	7/15/2003	17	2	87
7278564911	7/15/2003	19	1	241
6612853500	7/16/2003	14	1	241
7278564911	7/16/2003	14	2	282

FIG. 6D

Originating number	Date	hour	Calls	Duration (s)
5122322321	7/15/2003	14	1	43
6612853500	7/15/2003	14	3	70
7278564911	7/15/2003	14	2	26
6612853500	7/15/2003	15	2	97
7278564911	7/15/2003	15	1	76
6612853500	7/15/2003	16	3	255
7278564911	7/15/2003	16	1	22
6612853500	7/15/2003	17	1	216
7278464911	7/15/2003	17	1	64
7278564911	7/15/2003	17	1	13
7278564911	7/15/2003	19	1	281
6612853500	7/16/2003	14	2	306
7278564911	7/16/2003	14	2	282

FIG. 6E

Originating Number	Hour	Date	Dataset 1 Calls	Dataset 2 Calls	Count Variance
7278564911	14	7/15/2003	2	2	0
6612853500	14	7/15/2003	4	3	-0.25
5122322321	14	7/15/2003	0	1	1
7278564911	15	7/15/2003	1	1	0
6612853500	15	7/15/2003	2	2	0
7278564911	16	7/15/2003	1	1	0
6612853500	16	7/15/2003	3	3	0
7278564911	17	7/15/2003	2	1	-0.5
7278464911	17	7/15/2003	0	1	1
6612853500	17	7/15/2003	1	1	0
7278564911	19	7/15/2003	1	1	0
7278564911	14	7/16/2003	2	2	0
6612853500	14	7/16/2003	1	2	1

FIG. 6F

Originating Number	Hour	Date	Dataset 1 Calls	Dataset 2 Calls	Count Variance
5122322321	14	7/15/2003	0	1	1
7278464911	17	7/15/2003	0	1	1
6612853500	14	7/16/2003	1	2	1

FIG. 6G

Originating Number	Terminating Number	Date	Ten Minutes	Calls	Duration(s)
6612853500	5616942852	7/16/2003	1410	1	241

FIG. 6H

Originating number	Terminating Number	Date	Ten Minutes	Calls	Duration(s)
5122322321	6172332321	7/15/2003	1430	1	43
7278464911	6163352268	7/15/2003	1700	1	64
6612853500	5616942852	7/16/2003	1410	1	241
6612853500	9724915705	7/16/2003	1440	1	65

FIG. 6I

Originating Number	Terminating Number	Ten Minutes	Date	Dataset 1 Calls	Dataset 2 Calls	Count Variance
5122322321	6172332321	1430	7/15/2003	0	1	1
7278464911	6163352268	1700	7/15/2003	0	1	1
6612853500	5616942852	1410	7/16/2003	1	1	0
6612853500	9724915705	1440	7/16/2003	0	1	1

FIG. 6J

Originating Number	Terminating Number	Ten Minutes	Date	Dataset 1 Calls	Dataset 2 Calls	Count Variance
5122322321	6172332321	1430	7/15/2003	0	1	1
7278464911	6163352268	1700	7/15/2003	0	1	1
6612853500	9724915705	1440	7/16/2003	0	1	1

FIG. 6K

ID	Originating number	Terminating number	Date	Time	Duration [s]
21	5122322321	6172332321	7/15/2003	2:33:00 PM	43
3	6612853500	9724915705	7/16/2003	2:42:00 PM	65
14	7278464911	6163352268	7/15/2003	5:04:00 PM	64

FIG. 6L

ID	Originating number	Terminating number	Date 1	Date 2	Time	Duration (s)
3	6612853500	9724915705	7/15/2003	7/16/2003	2:42:00 PM	65

FIG. 6M

ID	Originating number 1	Originating number 2	Terminating number	Date	Time	Duration (s)
14	7278564911	7278464911	6163352268	7/15/2003	5:04:00 PM	64

FIG. 6N

ID	Originating number	Terminating number	Date	Time	Duration (s)	Problem
21	5122322321	6172332321	7/15/2003	2:33:00 PM	43	Invalid CDR
3	6612853500	9724915705	7/16/2003	2:42:00 PM	65	Incorrect Date
14	7278464911	6163352268	7/15/2003	5:04:00 PM	64	Incorrect Originating Number

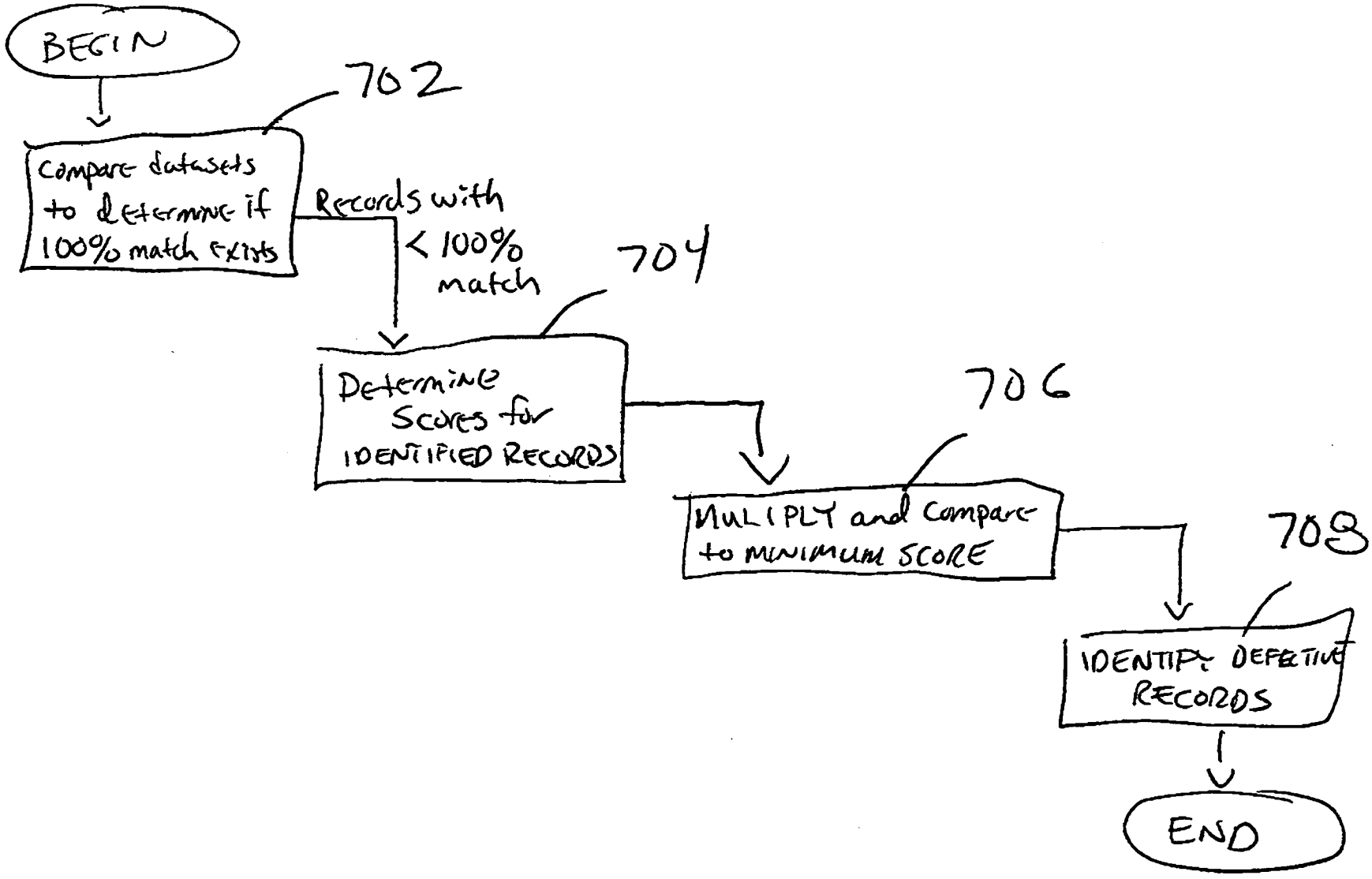

BEGIN
702
Compare datasets to determine if 100% match exists
Records with < 100% match
704
Determine Scores for IDENTIFIED RECORDS
706
MULTIPLY and Compare to MINIMUM SCORE
708
IDENTIFY DEFECTIVE RECORDS
END

FIG. 7

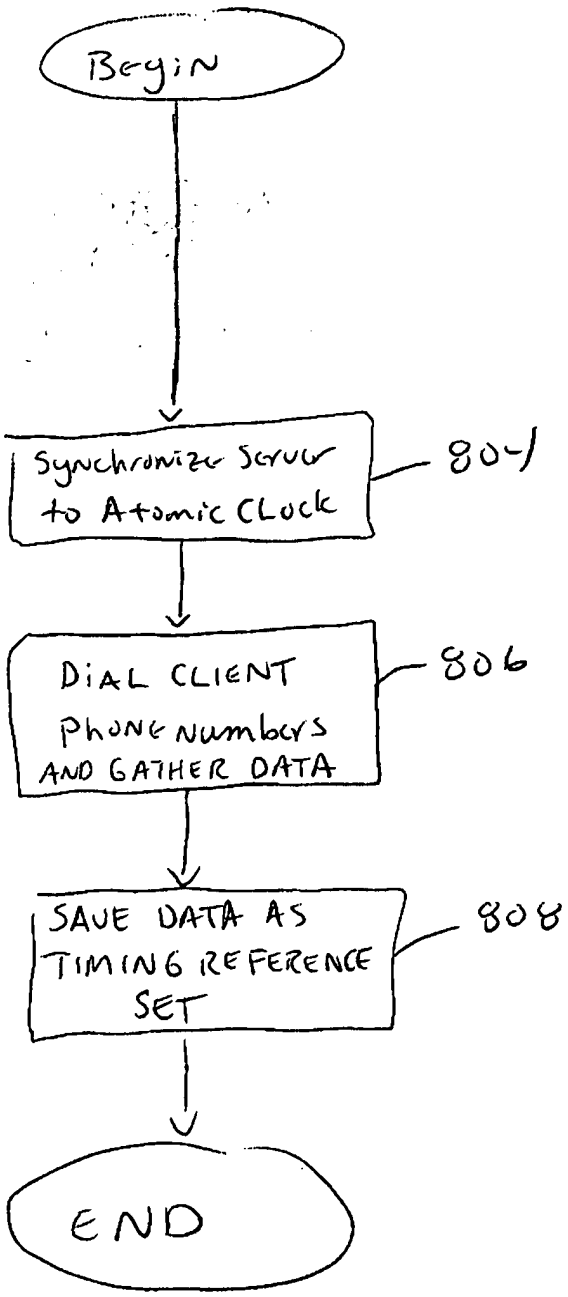

Begin
Synchronize Server to Atomic Clock
804
DIAL CLIENT PHONE Numbers AND GATHER DATA
806
SAVE DATA AS TIMING REFERENCE SET
808
END

FIG. 8

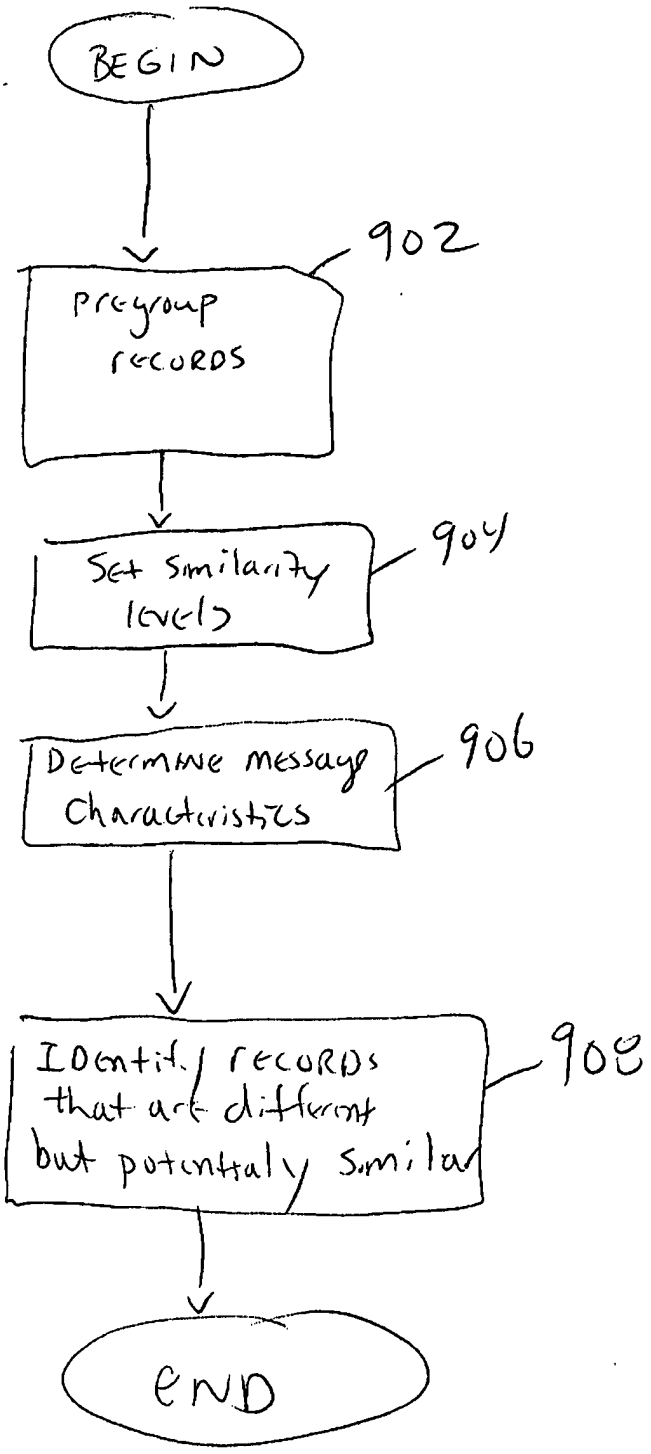
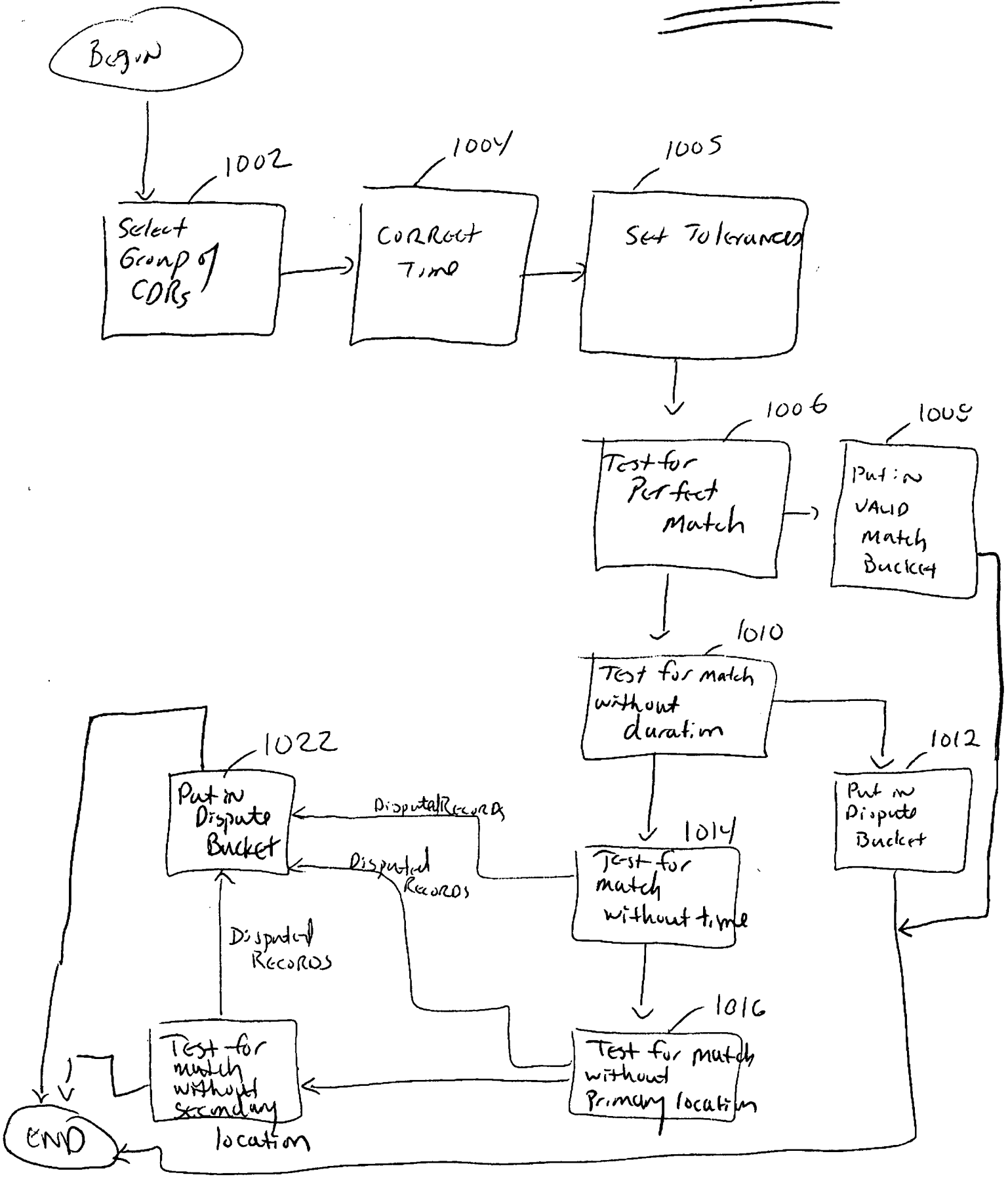

BEGIN
902
Pregroup records
904
Set similarity levels
906
Determine message characteristics
908
Identify records that are different but potentially similar
END

FIG. 9

FIG. 10


Begin
1002
Select Group of CDRs
1004
CORRECT TIME
1005
Set Tolerances
1006
Test for Perfect Match
1008
Put in VALID Match Bucket
1010
Test for match without duration
1012
Put in Dispute Bucket
1014
Test for match without time
1016
Test for match without Primary location
1022
Put in Dispute Bucket
Disputed Records
Disputed Records
Disputed Records
Test for match without secondary location
END

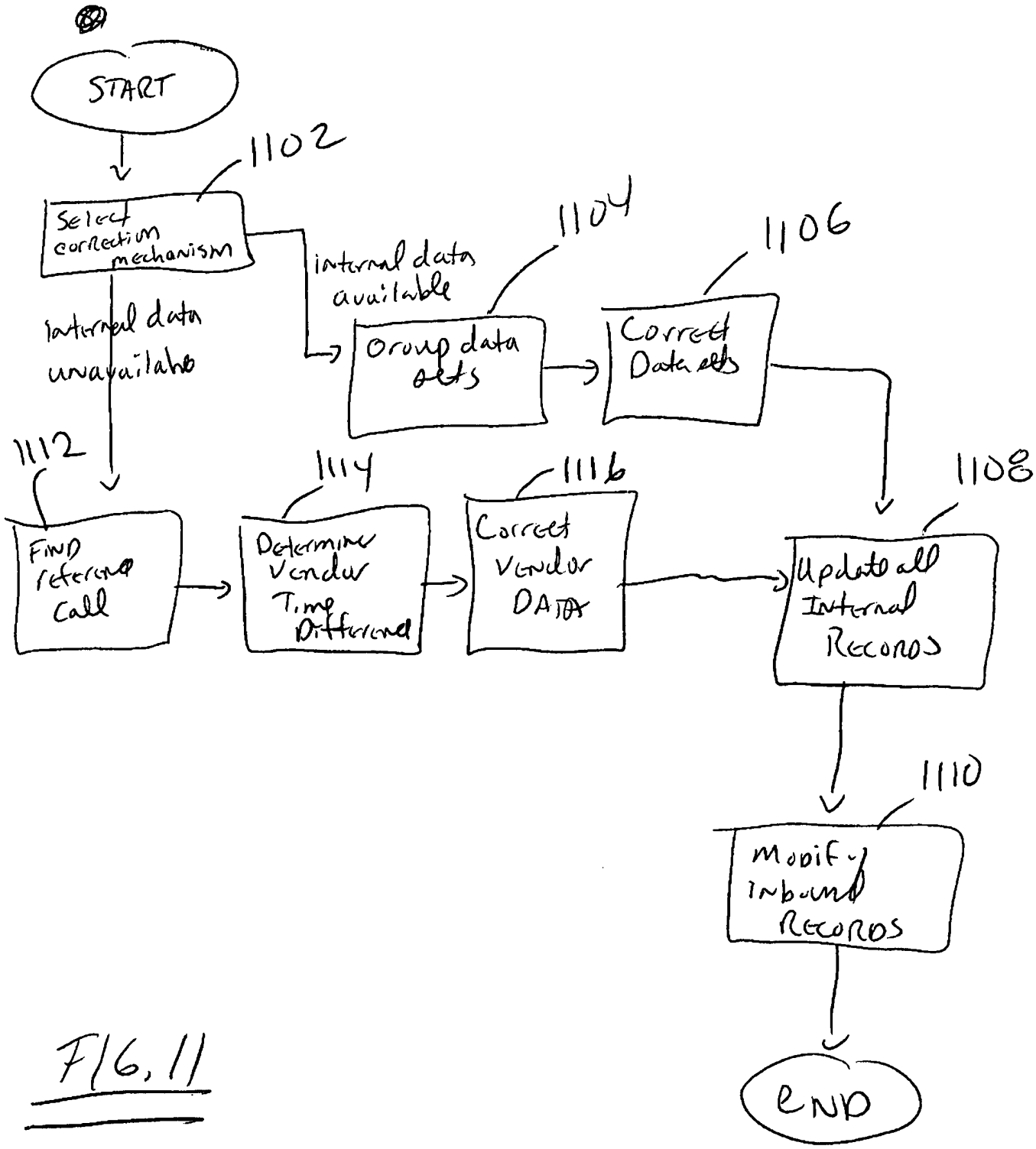

START
1102
Select correction mechanism
internal data available
internal data unavailable
1104
Group data sets
1106
Correct Data sets
1112
FIND referenced Call
1114
Determine Vendor Time Differential
1116
Correct Vendor DATA
1108
Update all Internal Records
1110
Modify Inbound Records
END

FIG. 11

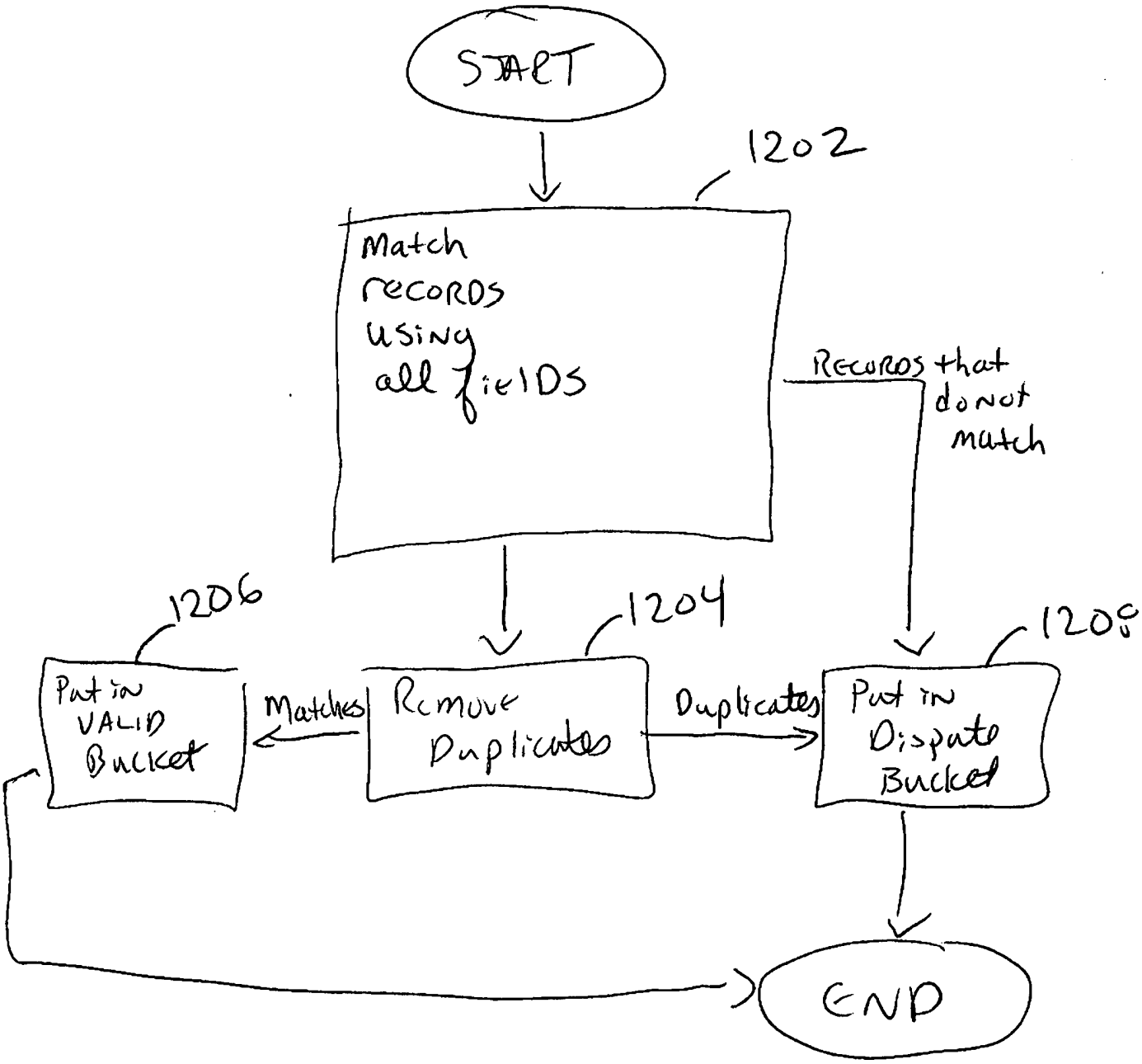

START
1202
Match records using all fields
Records that do not match
1206
1204
1208
Put in VALID Bucket
Matches
Remove Duplicates
Duplicates
Put in Dispute Bucket
END

FIG. 12

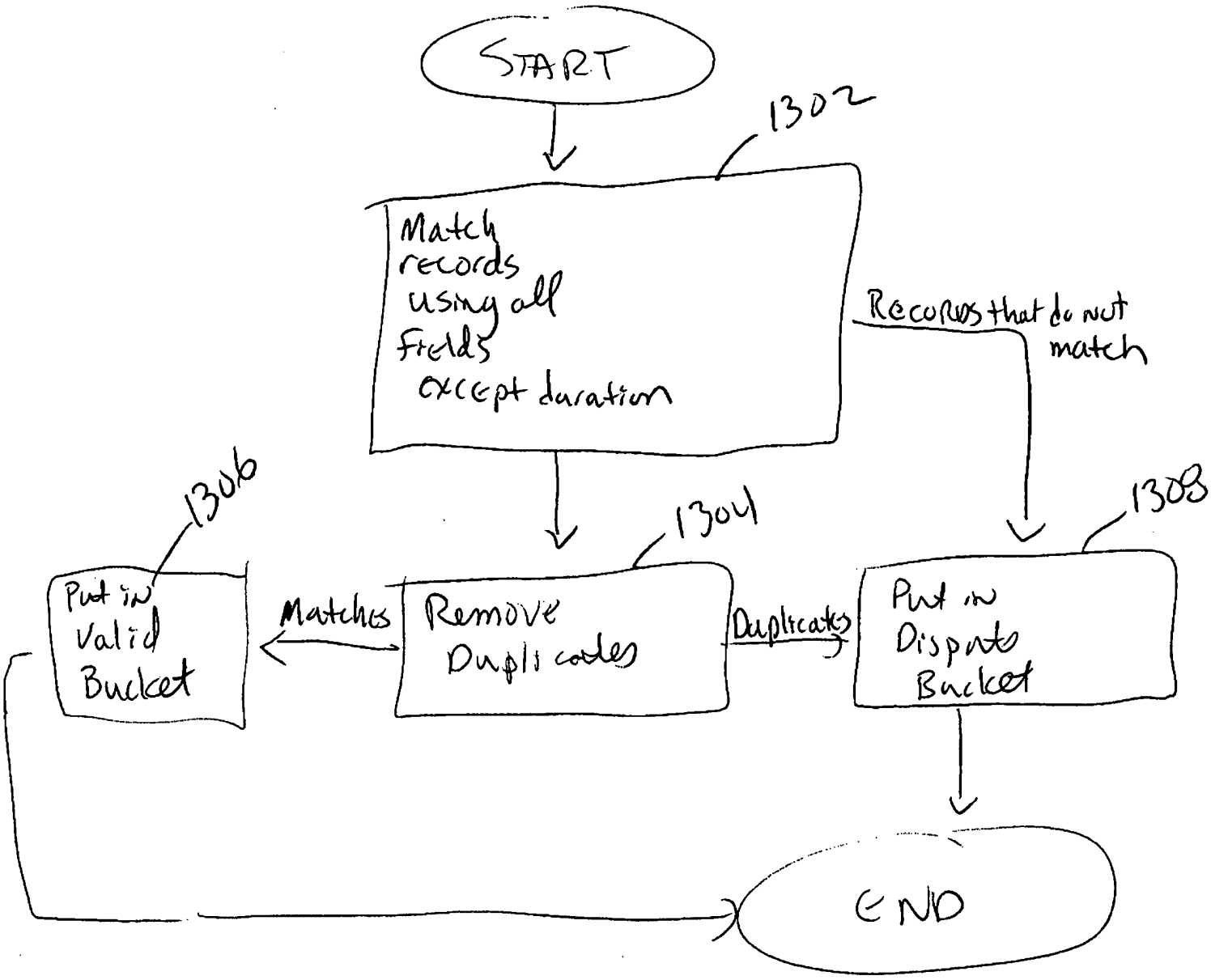

START
1302
Match records using all Fields except duration
Records that do not match
1306
Put in Valid Bucket
Matches
1304
Remove Duplicates
Duplicates
1308
Put in Dispute Bucket
END

FIG. 13

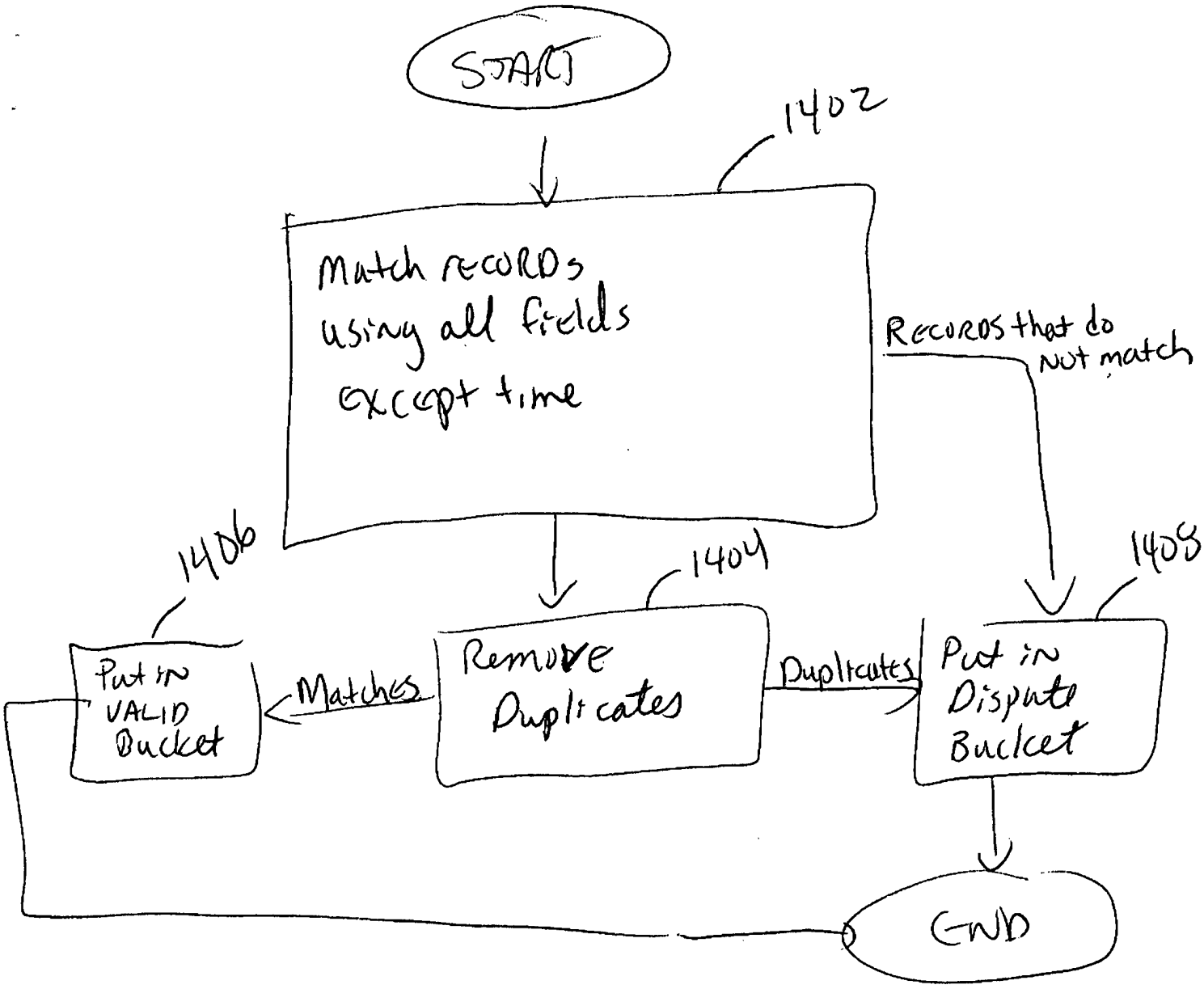

START
1402
Match records using all fields except time
Records that do not match
1406
1404
1408
Put in VALID Bucket
Matches
Remove Duplicates
Duplicates
Put in Dispute Bucket
END

FIG. 14

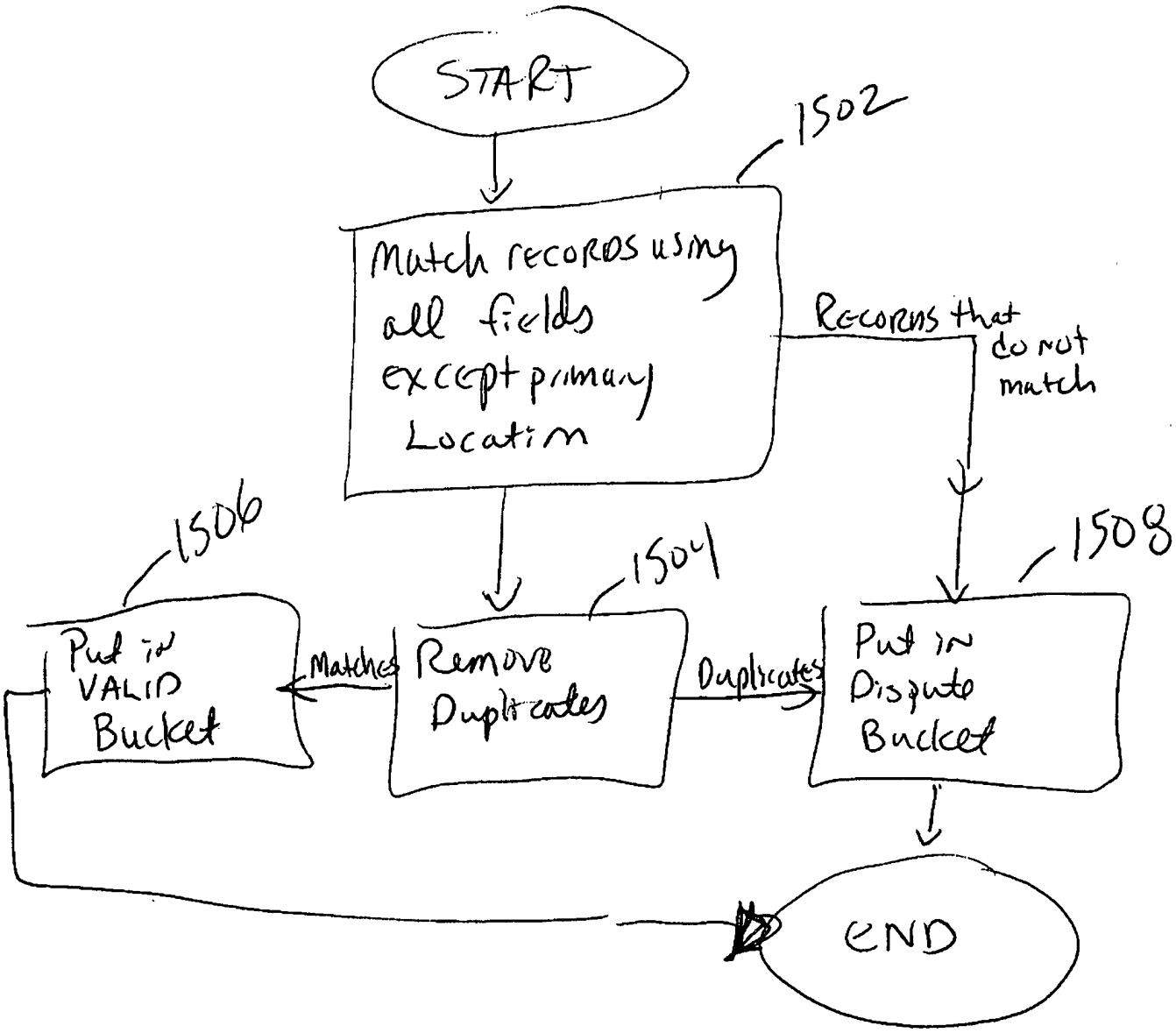

START
1502
Match records using all fields except primary Location
Records that do not match
1506
1504
1508
Put in VALID Bucket
Matches
Remove Duplicates
Duplicates
Put in Dispute Bucket
END

FIG. 15

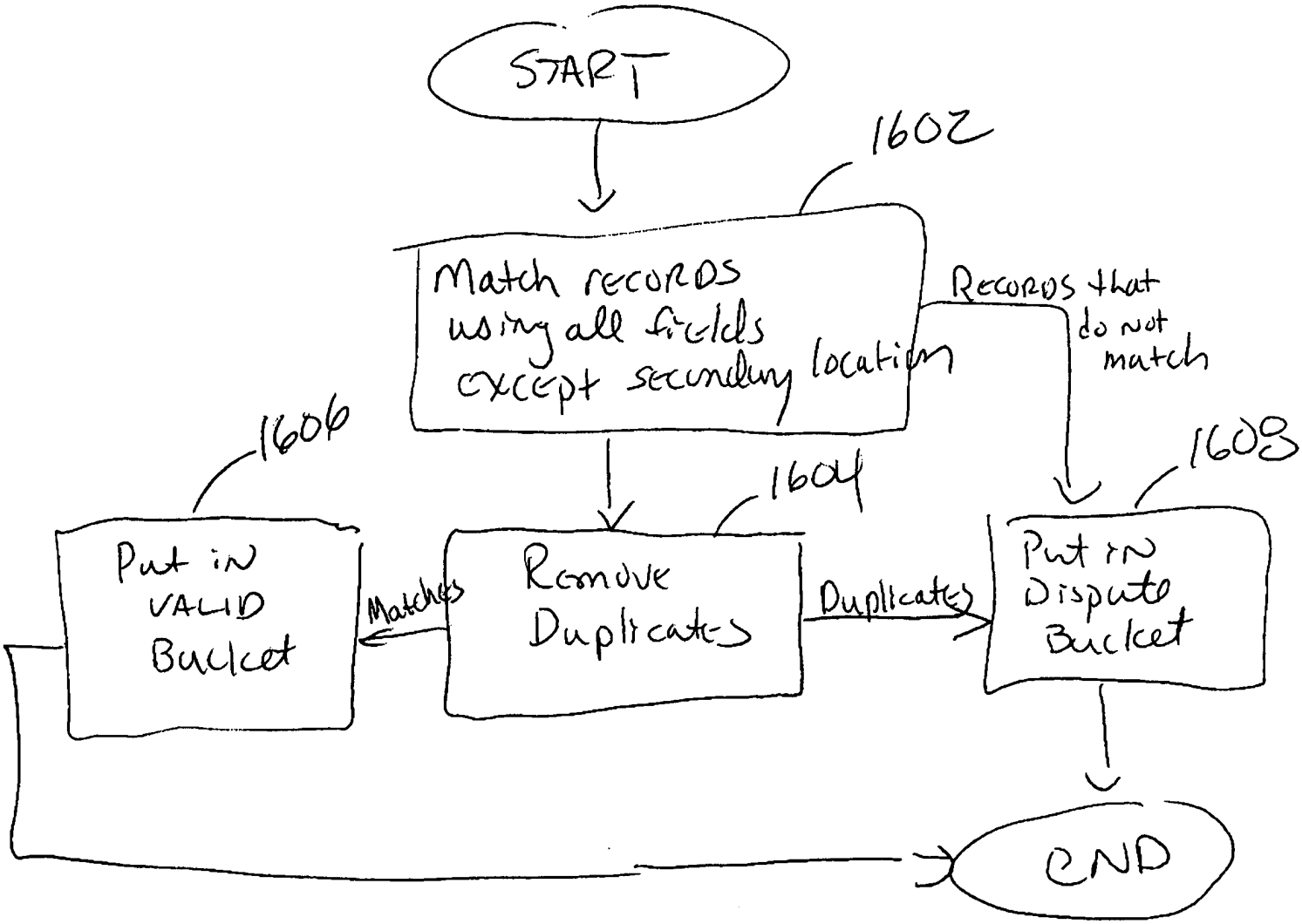

START
1602
Match records using all fields except secondary location
Records that do not match
1606
1604
1608
Put in VALID Bucket
Matches
Remove Duplicates
Duplicates
Put in Dispute Bucket
END

FIG. 16